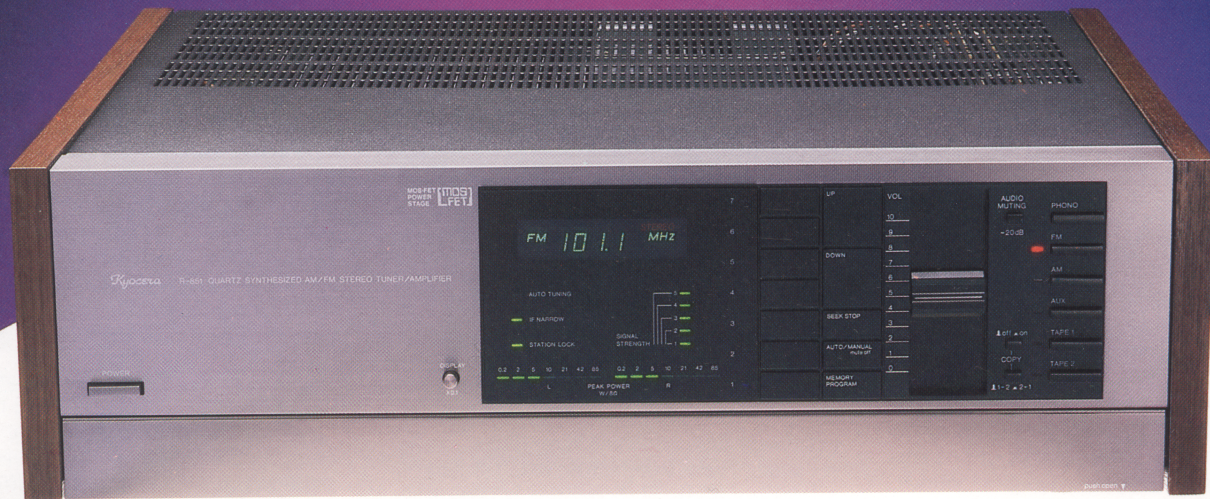


# KYOCERA R-851

AM / FM STEREO TUNER / AMPLIFIER  
WITH MOS FET HIGH-SPEED POWER AMPS



MASTERING THE ART OF SOUND



# THE KYOCERA R-851 WITH MOS FET FOR THOSE WHO DEMAND

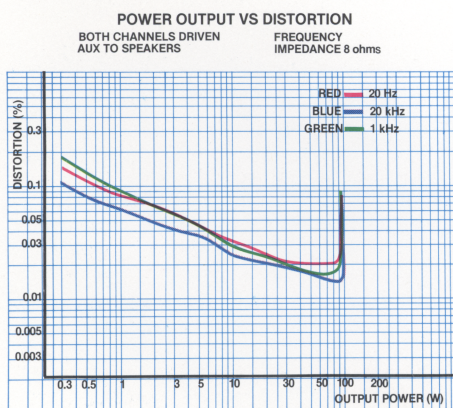
If you want sound that's far above the run-of-the-mill, sound that's pure and distinctive...if you're the sort of listener who hears subtleties others miss...

...then the Kyocera R-851 is for you!

The sense of *being there* is almost overpowering. All this comes from 85 watts per channel of power (with dynamic power far above this figure) and some of the most sophisticated circuitry in the business. Above all, the R-851 uses MOS FET's, the new breed of output transistors in the amplifier section. They can handle the transients, the power surges, the power requirements of present-day sound (and tomorrow's digital sound) better than bipolar transistors ever could—and give you a sonic purity like no other (many claim MOS FET's have picked up the warm, rich sound of the great tube amps and have gone a step beyond!). Specifically, the R-851 uses compact 3012 cell-type MOS FET's in its low TIM power amplifiers.

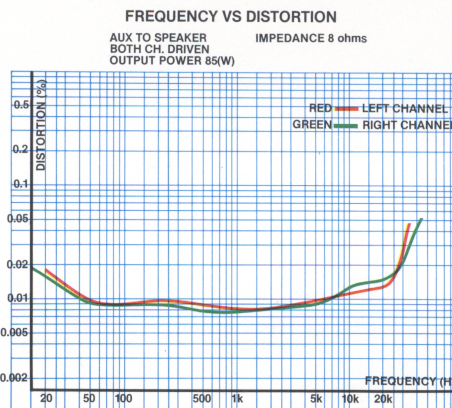
## Holding down the negative feedback.

To improve frequency response and reduce distortion behavior, circuitry for the R-851 has been designed to use as little negative feedback as possible. This is accomplished by use of MOS FET symmetrical push-pull and 2-pole phase compensation circuits, as well as using uniform negative feedback at each frequency spectrum. The result: low transient intermodulation distortion.



## Up with switching speed, down with distortion.

Normally, as power transistors switch on and off during operation, they produce a form of noise known as switching distortion. To greatly reduce switching distortion, Kyocera has incorporated an automatic variable bias circuit in the R-851 where incoming signals are constantly monitored and appropriate bias applied to the MOS FET's in the amplifiers. Since the power MOS FET's do not have carrier compensation effect, switching speed is extremely fast, and switching distortion is reduced. These two factors result in low distortion, high-speed frequency response and extra wide power bandwidth.



## Three-band parametric-type equalization.

The quest for flat response is often found to be less than satisfactory because of the listening environment. Speaker positioning, furnishings, carpeting, drapes, type of room construction all play a roll in the perceived sound. To compensate for these conditions, truly versatile tone controls are the best answer.

The R-851's bass, mid-range and treble controls with parametric-type equalization allow continuously variable turnover frequencies to compensate for these various environmental differences. The bass control range is from 100 to 500 Hz variable; mid-range from 500 to 2000 Hz variable; and treble ranges from 2000 to 10 kHz variable.

A subsonic filter of 12dB/octave vastly reduces turntable rumble without affecting the audible tonal quality, while the high pass filter minimizes noise from scratched records and noisy AM and mono FM stations, and the FM MPX filter reduces noise on weaker stereo FM stations.

## Made for taping.

The R-851 will accept connections from two tape decks, and provides two-way tape monitoring and two-way dubbing.





# KYOCERA R-851 T POWER AMPS. MAND THE VERY BEST.

## Ready for either MM or MC phono cartridges.

In addition to the widely used moving magnet phono cartridges, the R-851 also accepts the latest quality moving coil phono cartridges—no special outboard low noise MC preamplifier is required for the MC mode.

## A Quartz lock on FM tuning accuracy.

The first requirements for enjoying the true quality of FM stereo are pinpoint station tuning and accurately locking in the desired frequency. Kyocera's quartz phase locked loop tuning system provides both tuning accuracy and freedom from drift. A phase comparing frequency at 25 kHz, beyond the bounds of audibility, provides the standard. Should the tuned frequency begin to drift, it is immediately sensed and automatically corrected by the built-in servo circuit. These changes and corrections are imperceptible to the listener. Specially designed characteristics of the synthesizer circuit also prevent generation of internal beat and interference frequencies and maintain accurate tracking of the tuned frequencies by automatic varactor tuning.

This electronic tuning circuit also provides 14 programmable stations (7 FM & 7 AM). Set the R-851 for automatic station seek and let it conveniently do the work for you.

## For unsurpassed tuner performance.

In keeping with Kyocera's no compromise approach to amplifier design and performance, similar consideration has been given to the tuner front end design. At the front end, double-tuned stages are

incorporated with automatic-gain-controlled dual gate MOS FET's in the RF and mixer stages. Tracking of all tuning circuits is accomplished by the use of series twin type variable capacitance diodes for high level signal operation to improve spurious response, image and RF intermodulation rejection. High selectivity linear-phase filters smooth out IF response, providing both overall excellence in sonic quality and selectivity.

## IF bandwidth selection made easy.

Bandwidth Selection can provide appropriate selectivity when you "tune in" a weak station near one that is stronger in signal output. Kyocera uses an automatic switchable IF bandwidth circuit to overcome this problem.

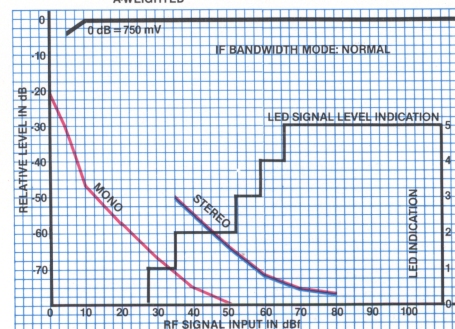
As soon as a beat interference occurs at about  $\pm 100$  kHz from the IF frequency, bandwidth is automatically narrowed, locking out the interfering station. Simultaneously, an anti-birdie 2-pole low-pass filter automatically switches into the detector output, further reducing effects of adjacent channel interference.

## Designed for every audio need.

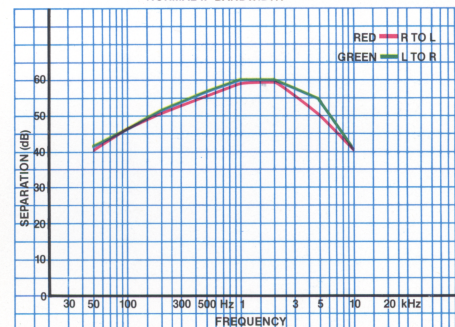
A host of other features enable the R-851 to satisfy the needs of the most meticulous audiophile. As an example, the fluorescent digital frequency display is driven by a fixed voltage supply. It has been found that displays driven by dynamic switching type voltage often generate switching noise, degrading S/N and distortion ratios. Using a non-switching supply in the R-851 eliminates this problem.

A Quadrature detector and the NF chopper type demodulator circuit employed for MPX provide a high S/N ratio, superior stereo separation and low distortion.

FM INPUT LEVEL, S + N/N RATIO & SIGNAL LEVEL INDICATION  
MONO... 1 kHz, 75 kHz DEVIATION  
STEREO, L = -R MODE, 9% PILOT SIGNAL (6.7 kHz)  
AWEIGHTED



FM CHANNEL SEPARATION  
MOD.: 100% (75 kHz DEV.)  
CARR. FREQ.: 98 MHz INPUT: 65 dBf  
NORMAL IF BANDWIDTH



## The specs behind the great sound.

The ultimate test, of course, for the R-851 is simply in the listening. You will hear music with unsurpassed definition, and achieve a sense of being at an actual performance.

Behind that unique sound are some exemplary technical specifications: Continuous average power output of 85 watts per channel, minimum RMS into 8 ohms, both channels driven from 20-20,000 Hz with no more than 0.015% total harmonic distortion. The tonal quality of the MOS FET power amp is further enhanced by a slew rate of 60 V/ $\mu$ sec and rise time of 1.0  $\mu$ sec, which greatly reduces the transient intermodulation distortion.



# The complete specification story.

## Front panel features

Slide volume control.  
 Rotary balance, bass, treble, mid-range and parametric-type equalizer controls.  
 Input selector—phono, FM, AM, AUX—push type.  
 Push switches: Tape 1, Tape 2, Copy, Copy/1 to 2, Copy/2 to 1, Audio mute, Mode, MM/MC, Loudness, De-emphasis, High blend, IF band-normal/narrow, FM mute-Hi/Lo, High filter, Subsonic filter, Tone EQ, Fluorescent display, Tuning-auto/manual, Tuning-up/down, Seek stop, Memory program 14 station preset, Speakers A, Speakers B, and Power-on/off.  
 Headphone jack (6 m/m dia.).  
 Input selector and Tape-1, Tape-2 indicators.  
 LED peak power display (left and right channels).  
 5 signal strength level LED indicators.  
 Station lock LED indicator.  
 Stereo LED indicator.  
 Auto tuning LED indicator.

## Electrical specifications

### 1] Audio section

Power output RMS, both channels driven into 8 Ohms with no more than 0.015% THD from 20-20,000 Hz : 85 watts per channel  
 Total harmonic distortion (at rated output) : 0.015%.  
 Power bandwidth (rated power - 3 dB) : 5-60 kHz.  
 Intermodulation distortion (at rated output) : 0.015%.  
 Slew rate : 60 V/μsec.  
 Rise time : 1.0 μsec.  
 Input sensitivity (at rated output)  
   —Phono MC : 125 microvolt/100 Ohms.  
   —Phone MM : 2.5mV/47 kOhm/100 pF.  
   —Others : 150mV/30 kOhm.  
 Maximum input voltage (at 1kHz-0.5% THD)—Phono MC : 10 mV.  
                                   —Phono MM : 200 mV.  
 Hum and noise ratio (IHF short-circuited, A-weighted, at rated output)  
   —Phono MC : 68 dB.  
   —Phono MM : 86 dB.  
   —Others : 100 dB.

Damping factor (8 Ohm at 1 kHz) : 50  
 Parametric-type equalizer  
   Bass (at 500 Hz turnover) : ± 10 dB at 100 Hz.  
   Mid-range (at 800 Hz turnover) : ± 10 dB at 800 Hz.  
   Treble (at 2 kHz turnover) : ± 10 dB at 10 kHz.

Turnover control  
   Bass control : 100 Hz-500 Hz variable.  
   Treble control : 2 kHz-10 kHz variable.  
   Center frequency—mid-range : 500-2 kHz variable.

Loudness compensation (volume at -30 dB)  
   100 Hz : +7 dB.  
   10 kHz : +3.5 dB.  
 High filter (6 dB/oct.) : -6 dB (10 kHz).  
 Subsonic filter (12 dB/oct.) : -3 dB (20 Hz).  
 Audio mute : -20 dB.  
 Tape recording output level (at rated input sensitivity) : 130 mV.

### 2] FM section

Tuning range : 87.5-108 MHz.  
 Usable sensitivity  
   Mono : 9.8 dBf/1.7 uv.  
   50 dB quieting sensitivity  
     Mono : 14.8 dBf/3.0 uv.  
     Stereo : 35 dBf/31 uv.  
 Capture ratio (normal IF) : 1.0 dB.  
 Distortion (normal IF)  
   Mono 1 kHz : 0.06%.  
   Stereo 1 kHz : 0.07%.  
 Separation (at 1 kHz) : 58 dB.  
 High-blend (at 1 kHz separation) : 20 dB.

Frequency response 30 Hz to 15 kHz : +0/-0.5 dB.  
 Signal-to-noise ratio  
   Mono : 88 dB.  
   Stereo : 76 dB.  
 Stereo threshold : 20 dBf or 40 dBf.  
 Muting threshold—high : 40 dBf/55 uv.  
                                   —low : 20 dBf/5.5 uv.  
 Selectivity  
   alternative channel (narrow IF) : 85 dB.  
 Spurious rejection : 95 dB.  
 IF rejection : 120 dB.  
 Image rejection : 85 dB.  
 Subcarrier product ratio : 65 dB.  
 Recording output voltage : 0.75 V.  
 Antenna provision : Unbalanced 75 Ohm, 300 Ohm adapter.

### 3] AM section

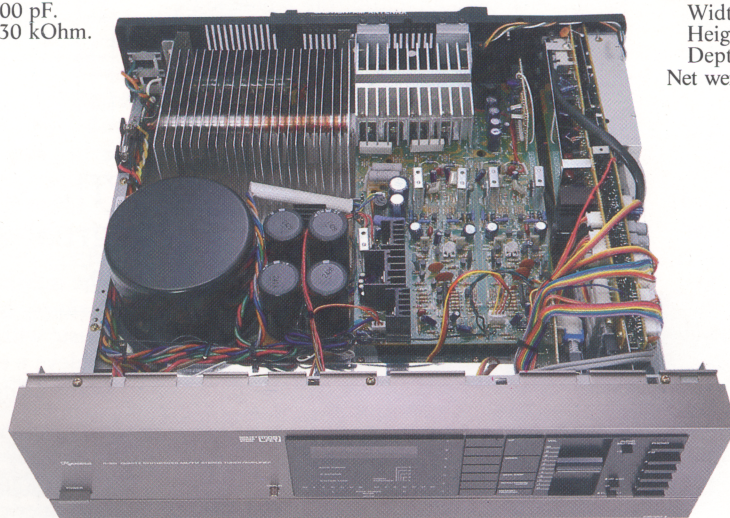
Tuning range : 520-1710 kHz.  
 Sensitivity  
   Ferrite antenna (-20 dB S/N) : 300 microvolt/m.  
 Image rejection : 50 dB.  
 Signal-to-noise ratio : 50 dB.  
 IF rejection : 85 dB.  
 Selectivity (± 20 kHz) : 45 dB.  
 Distortion : 0.3%.  
 Recording output voltage : 0.3 V.  
 Antenna provisions : a—Adjustable ferrite.  
                                   b—External terminal.

## Digital control section

Frequency spacing  
   AM : 10 kHz.  
   FM : 100 kHz.

## General specifications

AC power requirement : AC 120 V 60 Hz.  
 Power consumption : 250 Watts.  
 Dimensions  
   Width : 460 mm (18 1/8").  
   Height : 132 mm (5 1/16").  
   Depth : 369 mm (14 1/2").  
 Net weight : 27.1 lbs. (12.3 kgs).



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